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Developer
Forum
Spring 2002
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Software Technology Breakaways

Richard Wirt
Intel Fellow
Co-General Manager,
Software and Solutions Group

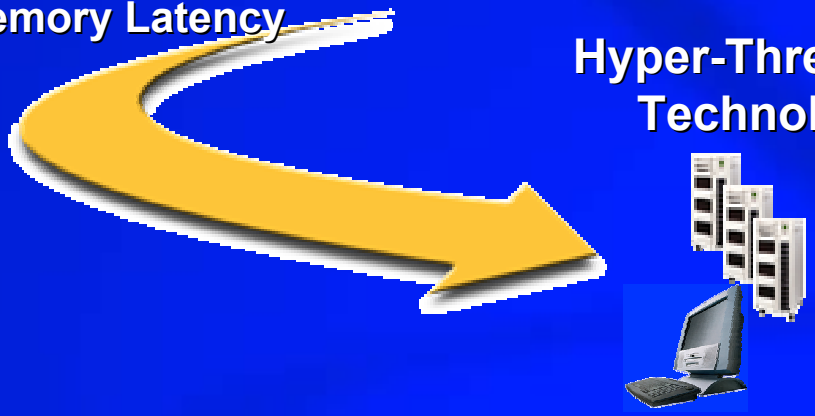
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Software and Hardware Becoming Interdependent

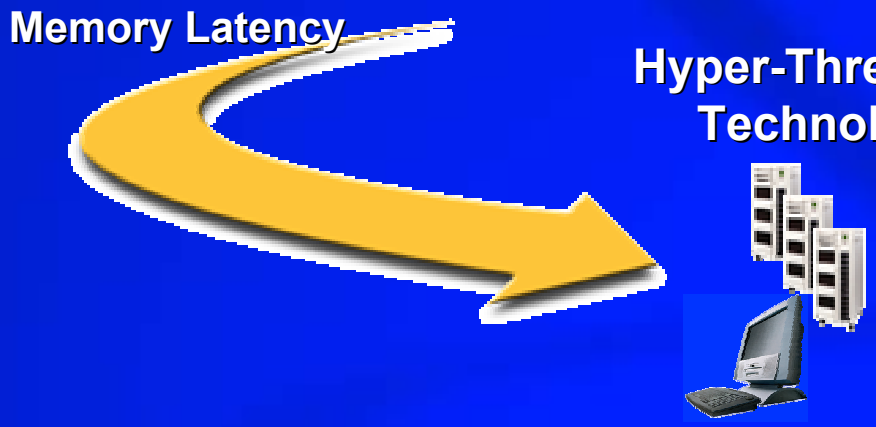
Memory Latency

Hyper-Threading Technology



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Software and Hardware Becoming Interdependent



BREAKAWAY
Threaded Applications

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Software and Hardware Becoming Interdependent

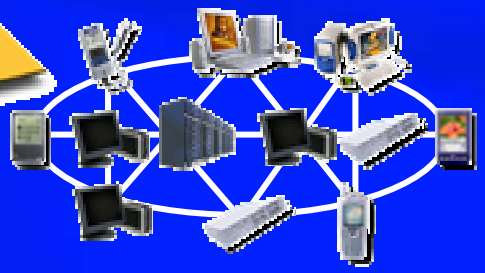
Memory Latency

Hyper-Threading Technology



Anytime, Anyplace Information Demand

Web Services



BREAKAWAY
Threaded Applications

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Software and Hardware Becoming Interdependent

Memory Latency

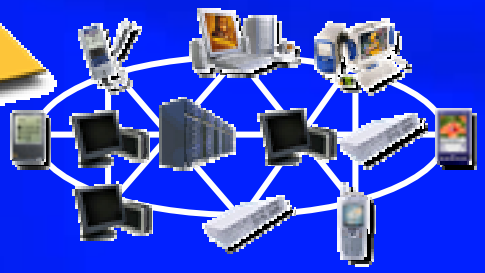
Hyper-Threading Technology



BREAKAWAY
Threaded Applications

Anytime, Anyplace Information Demand

Web Services

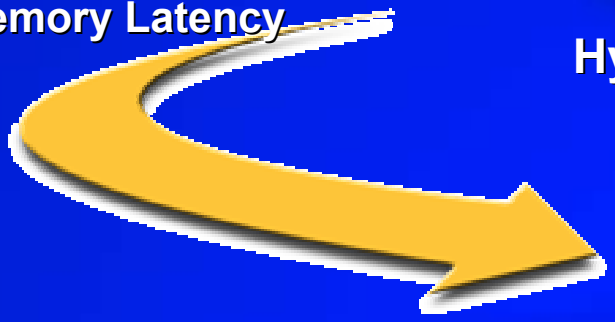


BREAKAWAY
Web Services Applications

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Threading

Memory Latency



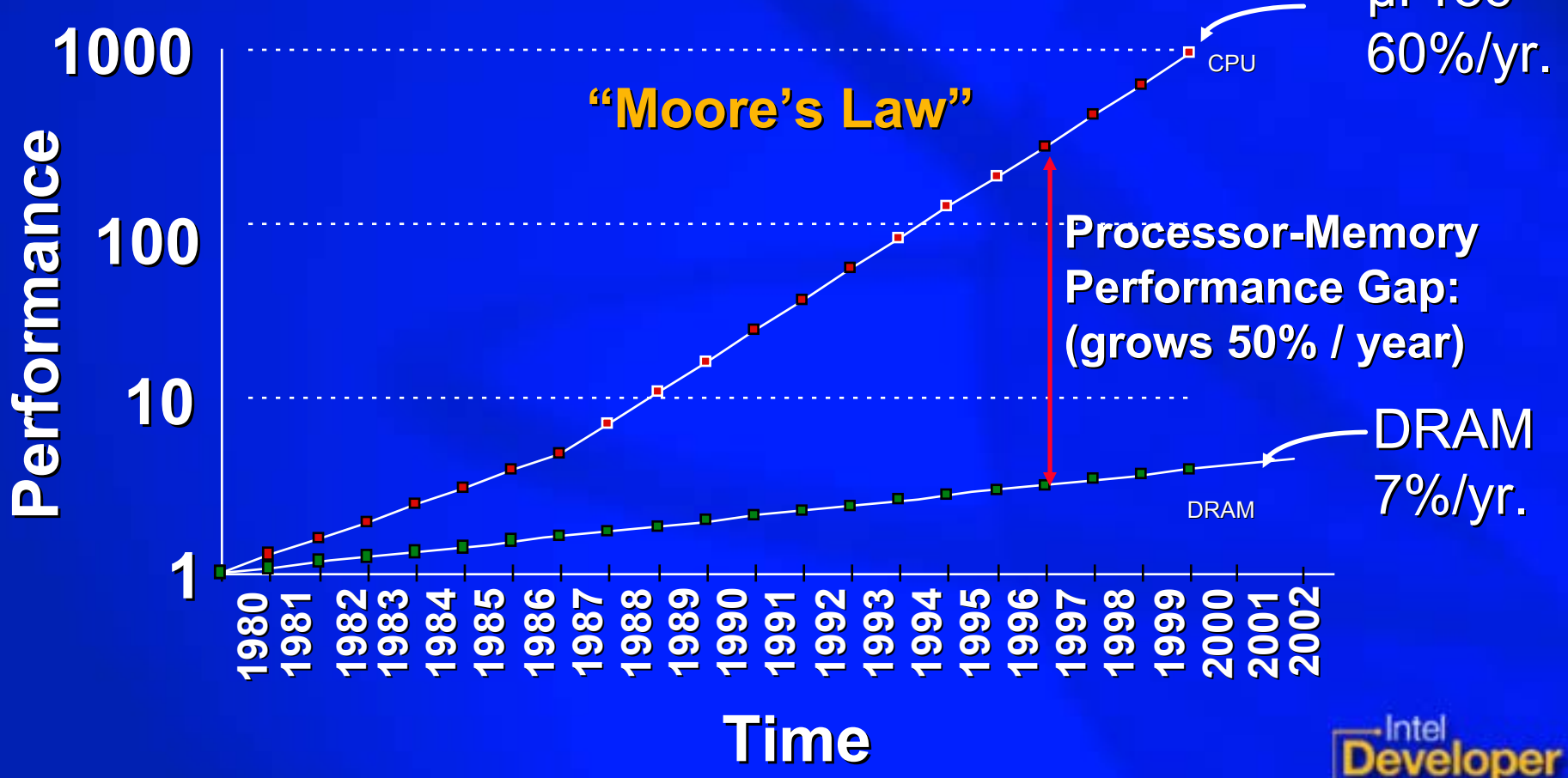
Hyper-Threading Technology



BREAKAWAY
Threaded Applications

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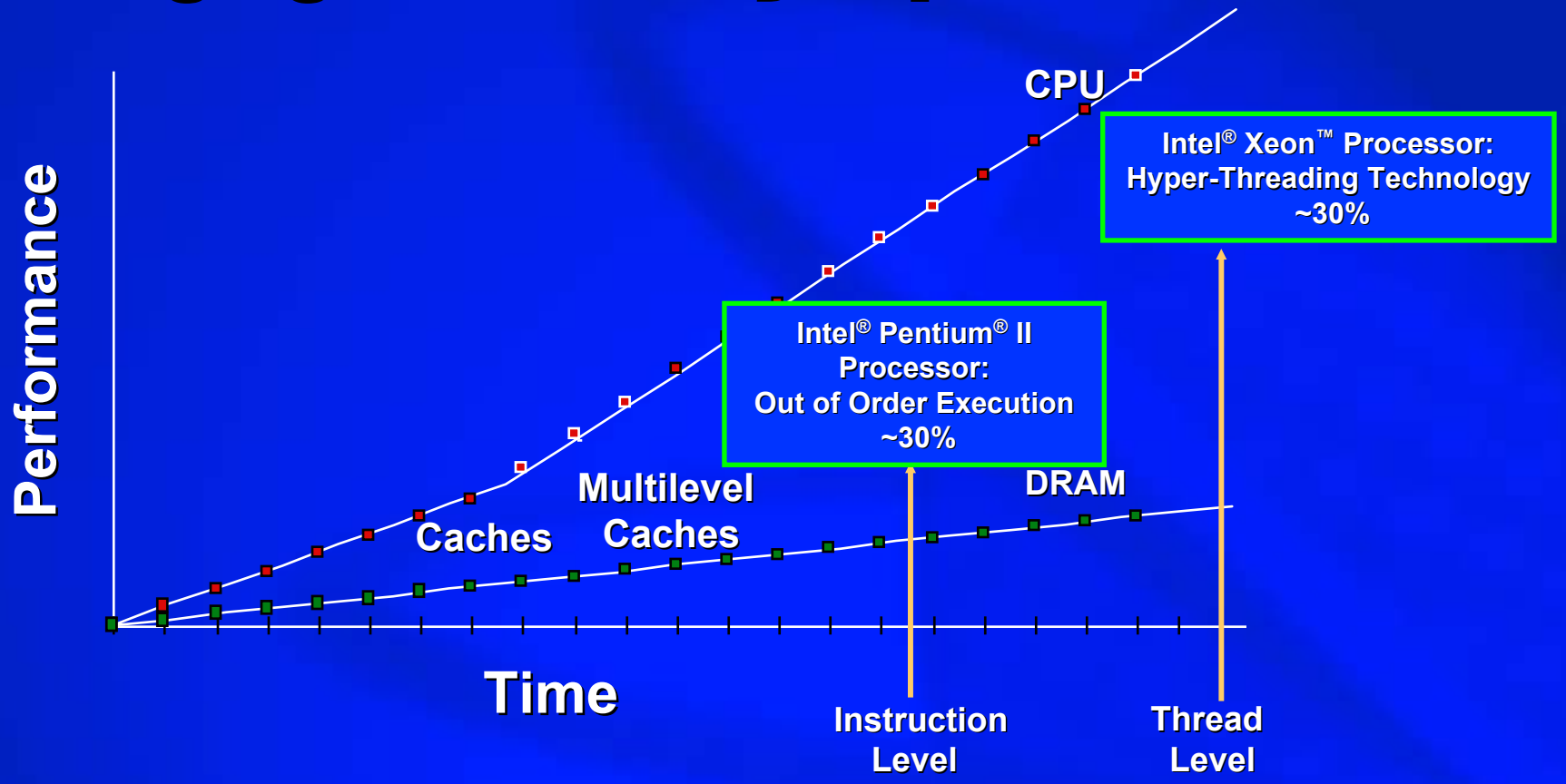
The Memory Gap



Source: David Patterson, UC Berkeley

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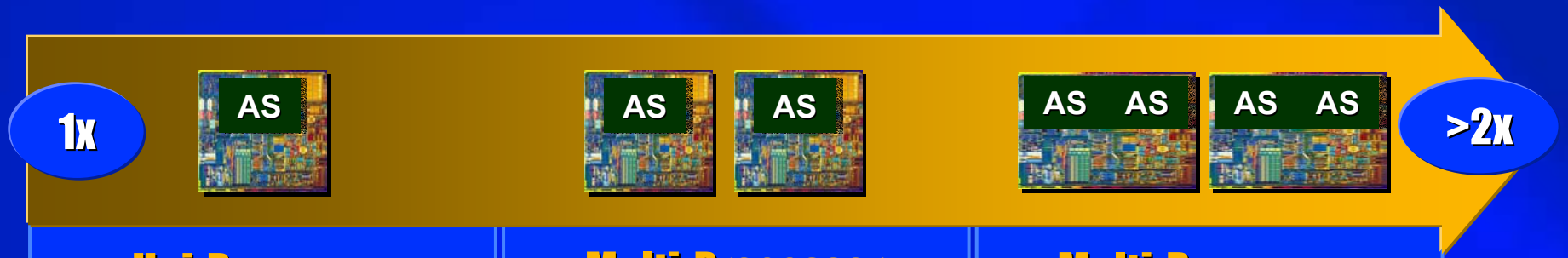
Bridging the Memory Gap



Hyper-Threading Technology
Feeds two instruction streams to better utilize shared execution units

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Full Spectrum of Threading



Uni-Processor	Multi-Processor	Multi-Processor with Hyper-Threading Technology
Single architecture state	Duplicate execution resources	Duplicate architecture state Shared execution resources per CPU

- Future Processors will Support Threads
- Threaded Applications Can Run across the Spectrum

Source: Intel Parallel Applications Center

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Intel Enabling the Industry for Threading

Working with OS Providers	Windows NT* Linux*
Working with Tools Community	Visual Studio* gcc*
Providing Enabling Services	Intel® Solution Services Intel® Developer Services Intel® Parallel Applications Center

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DEMO

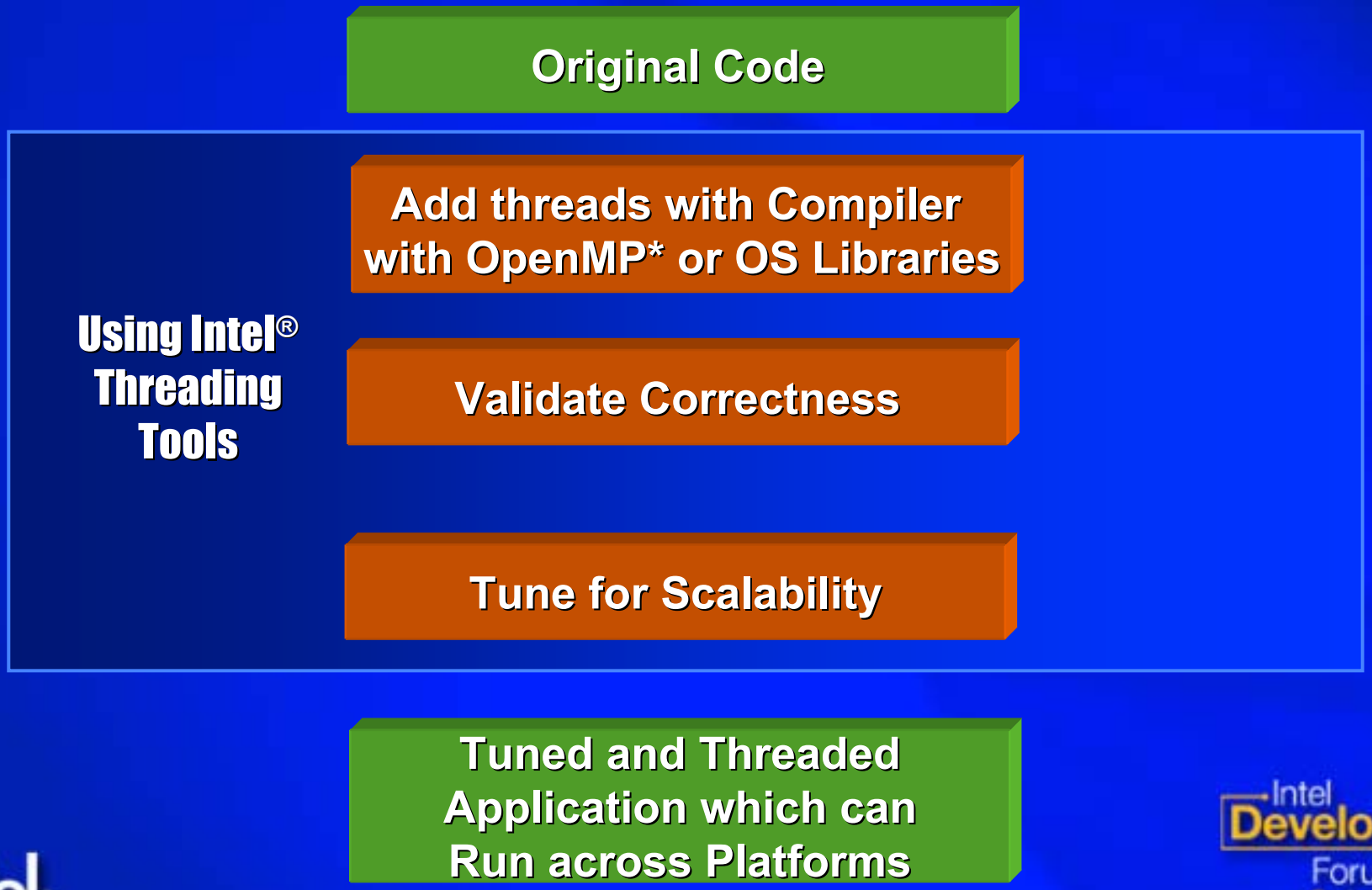
Updating Intel Products to Support Threading

Compilers		Supports OpenMP*
Performance Libraries		Tuned for Threads
VTune™ Performance Analyzer		Per-Thread Performance Analysis
Intel® Threading Tools		Where to Thread How to Thread Getting it Right

Supports Windows NT* and Linux*
Supports IA-32 and Itanium™ Architecture

*Other names and brands may be claimed as the property of others.

Threading Workflow



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Your Opportunity

Be an Early Adopter

of Hyper-Threading Technology

by Threading Your Applications

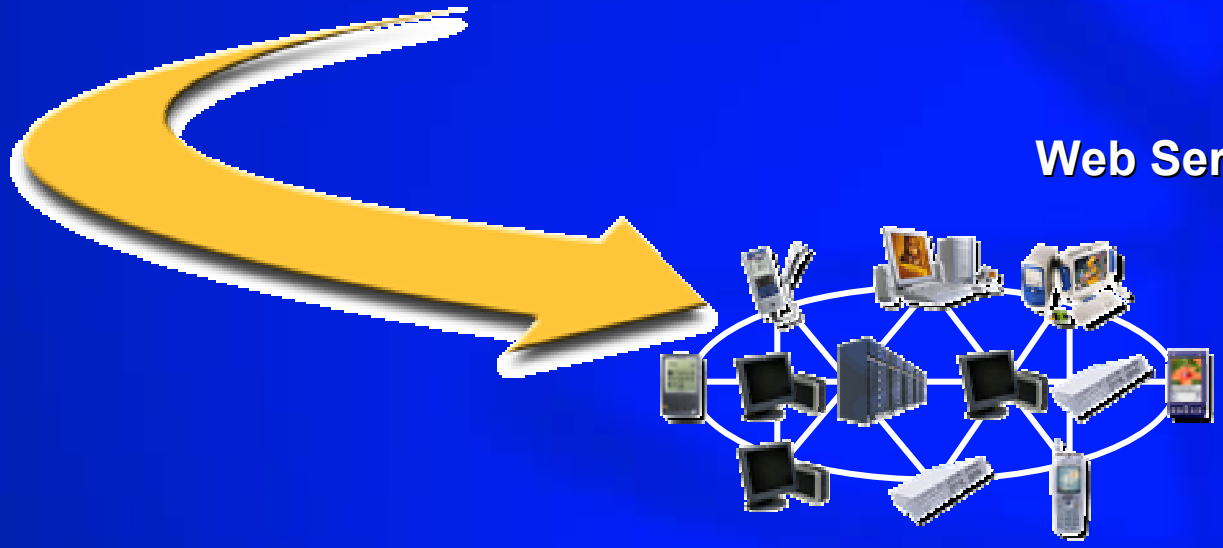
Platforms that Support Threads will be Pervasive

Threaded Applications Can Scale across the Spectrum

Intel Providing Threading Tools

Web Services

Anytime, Anyplace
Information Demand



Web Services

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Web Services
Applications

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Web Services are Real...

Microsoft readies tools to power Web services plan

REUTERS

BEA enters Web services race

InfoWorld, Jun. 4, 2001

Tech giants form Web services group

IBM, Microsoft, Intel, Oracle, HP join consortium

CBS.MarketWatch.com, Feb. 6, 2002

Intel on track with Web services

InfoWorld. Jan. 17, 2002

IBM announces support for Web services

InfoWorld. May 14, 2001

Businesses are Deploying Web Services Now

Zagat Survey — leisure information provider in New York *using Web services* to make its restaurant reviews accessible to a variety of devices over the Internet.

CareTouch — a division of Kaiser Permanente, *using Web services* to enable 8.5 million members to find the best price on medical services not covered by Kaiser's health plan.

The Limited — *using Web services* to simplify and automate relationships with its its entire supply chain: customers, trading partners, and suppliers.

– InfoWorld, Oct. 2001

Nordstrom.com—online sales outlet realizing tangible benefits from *using Web Services technology*.

– InfoWorld, Nov. 2001

...and it's Growing

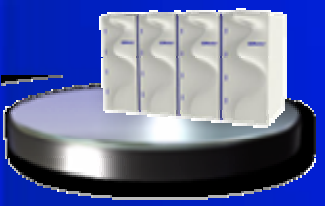
Web Services Interoperability Organization
www.ws-i.org



Evolution to Web Services

Fully Distributed Web Services

Database



Centralized Mainframes

Email



Client-Server

Component-Based Programming

Portal



Server-Centric Web

B2B



Server-Centric Web Services

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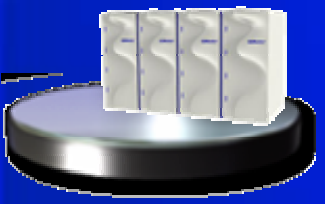
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Evolution to Web Services



Fully Distributed Web Services

Database



Centralized Mainframes

Email



Client-Server

Component-Based Programming

Portal



Server-Centric Web

B2B



Server-Centric Web Services

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Intel Enabling the Industry for Web Services

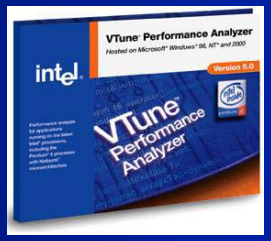
Tuning the Infrastructure	.NET*	Java*			
Driving Standards, Interoperability	CLI	SOAP	WSDL	UDDI	WS-I
Providing Enabling Services	Intel® Solution Services – End Users Intel® Developer Services – ISVs				

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New Products Support Web Services

Providing Enabling Tools



Intel® VTune™ Performance Analyzer 6.0

Supports .NET*

Supports Java*

Linux* Remote Data Collector

Today INTRODUCING

VTune™ Enterprise Analyzer

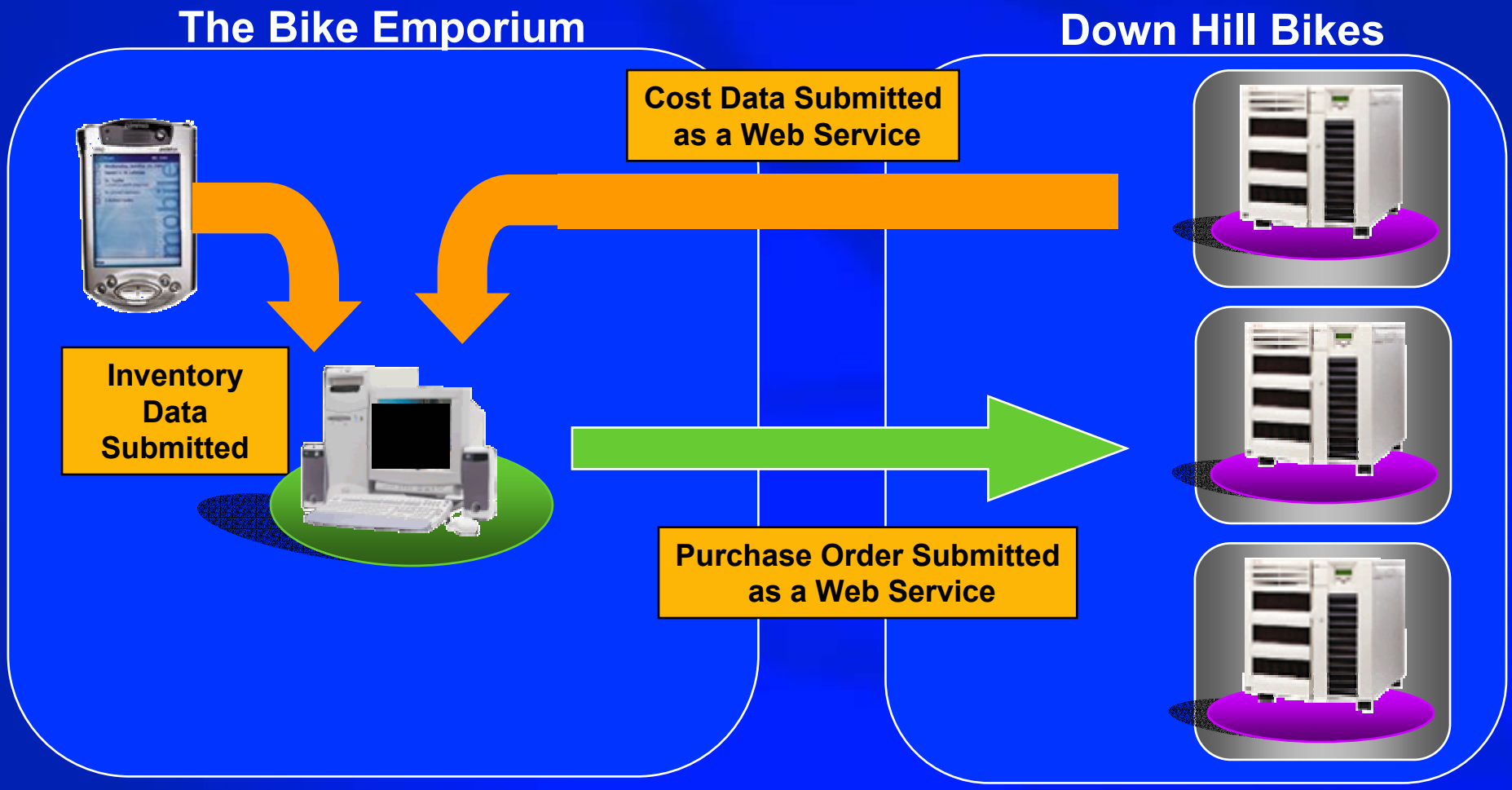
Supports tuning Web Services and 3 tier apps across the Enterprise

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Distributed Web Service



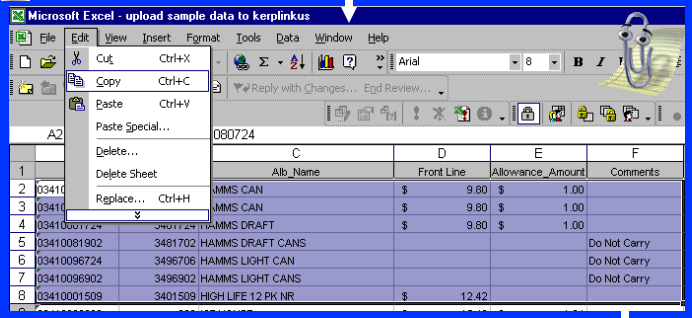
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DEMO
Distributed Web Service

The Bike Emporium

- WinCE*
- XML Data
- MSMQ*
- 802.11b
- Embedded VB





- Microsoft .NET* Framework
- PC Generated Web Service
- Microsoft Excel*
- Office XP* Web Services Toolkit

Down Hill Bikes



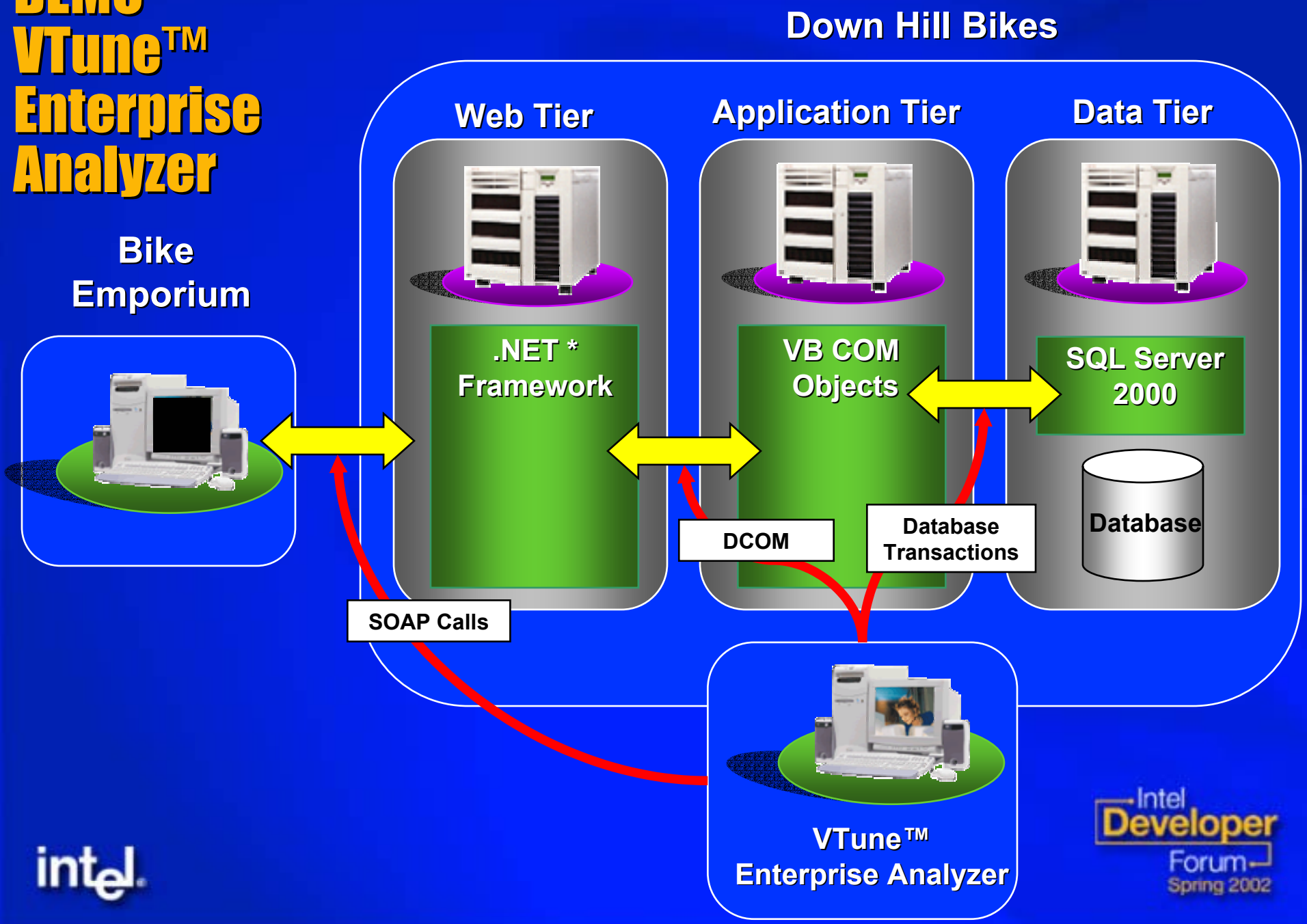
- SQL Server 2000
- SOAP/XML
- Microsoft .NET* Framework

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DEMO VTune™ Enterprise Analyzer



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Your Web Services Opportunity

Be an Early Adopter

of Web Services

Structure Applications

Describe the Data

Describe the Service

Discovery Services through Directories

Dynamically integrate Services

Intel® Solution Services

18 Intel Solution Centers Worldwide

250 Software and Consulting Engineers

More than 300 Projects Completed

Services and Consulting



Recent key customers:

3M, Charles Schwab, Fleetwood, Level 3, GE Power, Nestle, State Farm, Qwest, Genesys

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technical briefs, code samples
case studies

Early Access Programs
for Pentium® 4 Processor
for Itanium® Processor Family
for Intel® Xeon™ Processor

Software Development Environments

Developer Training

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Cross-Platform Support



Intel® Compilers
Intel® Performance Libraries
Intel® VTune™ Performance Analyzers
Intel® Threading Tools

www.intel.com/software/products

Software is Driving Solutions

Your Opportunity: Be a First Mover

Threading

Web Services

32 IDF Software Courses and Labs
Demos at Technology Showcase


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